Immersive learning technologies for distance simulation education for neonatal resuscitation providers

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Background

- Each year, over 13 million babies worldwide will need help to breathe at birth
- To provide this lifesaving care, healthcare professionals (HCP) must safely & effectively master their neonatal resuscitation knowledge & skills
- While frequent simulation training is recommended, it can be resource intensive & incompatible for distance learning
- Therefore, alternative education media are needed to improve access to training

Objectives

➤ We developed the RETAIN table-top & digital neonatal resuscitation simulators
➤ We aimed to understand educational outcomes and attitudes of HCPs towards training with these novel simulators
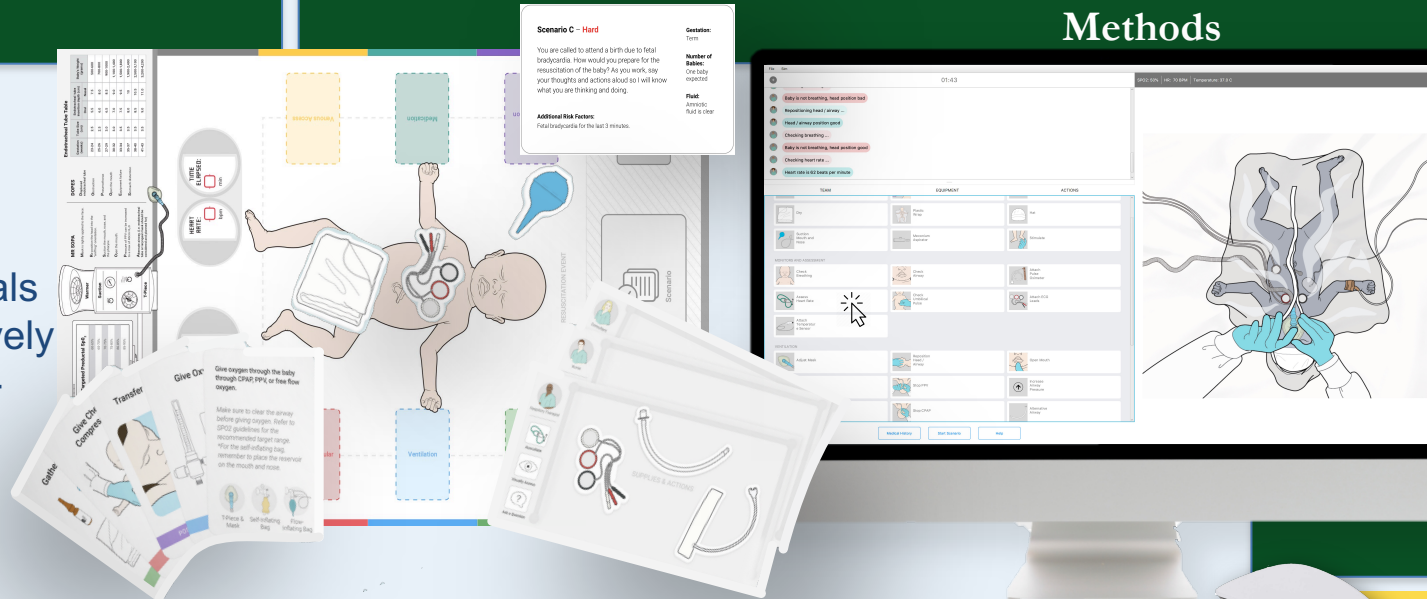
Methods

- Neonatal HCPs were recruited to play either the digital or table-top RETAIN simulation games
- Participants' performance was measured and compared before, during, and after play
- HCPs' attitudes towards the simulators was also collected

Conclusion

- HCPs showed improved knowledge immediately after training, long-term knowledge retention & knowledge transfer
- HCPs received the simulators positively
- Immersive games can be used for medical education, potentially for distance training

Results

Position	n	Years Experience
Registered Nurse	47	10.5 (8.2)
Respiratory Therapist	31	8.8 (13.2)
Neonatal Nurse Practitioner	8	19.8 (7.5)
Neonatal Fellow	14	3.2 (3.5)
	100	11.3 (9.1)

Table 1: Descriptive of HCP participants (87 female, 13 male). Results reported as mean (standard deviation).

Feedback towards RETAIN	
Enjoyable way of learning	3.8 (0.8)
Realistic scenario	4.1 (0.6)
Scenario simulated stress	3.9 (0.7)
Beneficial for NRP training	3.6 (0.7)

Table 2: HCPs' attitudes towards the RETAIN games. Data as mean(standard deviation) on 5-point Likert scale.
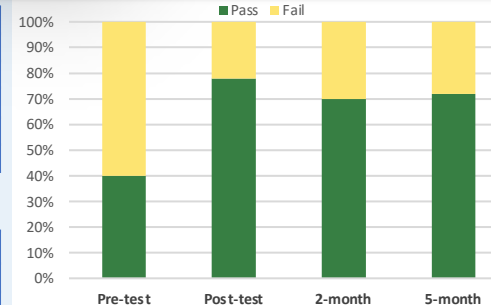

Figure 1: HCPs' improved knowledge of neonatal resuscitation before and after training with the digital game (significant improvement). Retesting after 2-months demonstrated successful knowledge retention, and successful knowledge transfer on the 5-month follow-up task. Performance on assessments scored as pass (green; 100% adherence) or fail (yellow; <100% adherence).
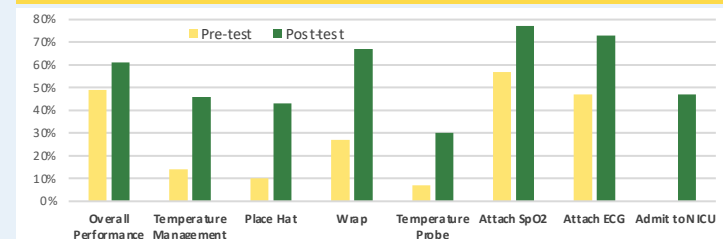

Figure 2: HCPs' improved knowledge of neonatal resuscitation before (yellow) and after (green) training with the table-top game. Overall performance between pre-post-test improved from 49-61%.